RESEARCH ARTICLE

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Comprehensiveness and Instructional Quality of YouTube Videos on Clinical Record-Keeping Training in Medical Education

ABSTRACT

Objective: Clinical record-keeping is recognized as a core competency in medical education. This study aimed to evaluate comprehensiveness and instructional quality of videos available on the YouTube platform for teaching clinical record-keeping.

Methods: YouTube was searched by using relevant keywords. Based on eligibility criteria, 59 videos were included in the study. Videos were assessed for country of origin, video length, number of likes, dislikes, comments, daily views, like ratio, and video power index. Tools to measure the quality of clinical notes, which are QNOTE and RED Checklist, have been used to assess comprehensiveness of the videos. Instructional quality was assessed using the instructional video quality checklist (IVQC).

Results: The comprehensiveness score was 60.4±17.89 (out of 100), while instructional quality score was 11.19±3.61 (out of 27). IVQC scores were significantly higher in the university/professional organizations and academics compared to the others ($p<0.001$). However, there was no significant difference between the groups in comprehensiveness scores ($p=0.131$).

Conclusions: YouTube videos missing important rate of components of clinical record-keeping. Moreover, the instructional quality of the videos falls below the expected levels. These problems still persist in the videos uploaded by universities/professional organizations and academics. Therefore, YouTube videos should be used cautiously for clinical record-keeping training by medical students and medical educators.

Keywords: Medical Documentation, Clinical Records, Medical Education, Youtube, Video Quality, Online Education.

Tıp Eğitiminde Klinik Kayıt Tutma Eğitimine Yönelik YouTube Videolarının Kapsamlılığı ve Eğitimsel Kalitesi

ÖZET

Amaç: Klinik kayıt tutma, tıp eğitiminde temel bir yetkinlik olarak kabul edilmektedir. Bu çalışma, klinik kayıt tutma konusunda eğitim veren YouTube platformundaki videoların kapsamlılığını ve eğitimsel kalitesini değerlendirmeyi amaçlamaktadır.

Yöntem: İlgili anahtar kelimeler kullanılarak YouTube'da arama yapıldı. Uygunluk kriterlerine göre, çalışmaya 59 video dahil edildi. Videoların yüklendiği ülke, video süresi, beğeni sayısı, beğenmeme sayısı, yorum sayısı, günlük izlenme sayısı, beğeni oranı ve video güç endeksi açısından değerlendirilmiştir. Videoların kapsamlılığını değerlendirmek için QNOTE ve RED Checklist adlı klinik notlar kalitesini ölçen araçlar kullanılmıştır. Eğitimsel kalite ise Eğitim Videosu Kalite Kontrol Listesi (IVQC) kullanılarak değerlendirilmiştir.

Bulgular: Kapsamlılık puanı 60.4±17.89 (100 üzerinden), eğitimsel kalite puanı ise 11.19±3.61 (27 üzerinden) olarak bulunmuştur. IVQC puanları, diğer gruplarla karşılaştırıldığında üniversite/profesyonel kuruluşlar ve akademisyenler tarafından yüklenen videolarda anlamlı derecede yüksek bulunmuştur ($p<0,001$). Bununla birlikte, gruplar arasında kapsamlılık puanlarında anlamlı bir fark bulunmamıştır ($p=0,131$).

Sonuç: YouTube videoları, klinik kayıt tutmanın önemli bileşenlerini eksik bırakmaktadır. Ayrıca, videoların eğitimsel kalitesi beklenen seviyenin altında kalmaktadır. Bu sorunlar, hâlâ üniversiteler/profesyonel kuruluşlar ve akademisyenler tarafından yüklenen videolarda da devam etmektedir. Bu nedenle, tıp öğrencileri ve tıp eğitimcileri tarafından klinik kayıt tutma eğitimi için YouTube videolarının dikkatlice kullanılması gerekmektedir.

Anahtar Kelimeler: Tıbbi Dokümantasyon, Klinik Kayıtlar, Tıp Eğitimi, Youtube, Video Kalitesi, Online Eğitim.

INTRODUCTION

Clinical records include all materials related to patients who receive healthcare service, whether as outpatients or inpatients, for any reason (1). Clinical records can be generally defined as the notes of health professionals who record a patient's symptoms, medical history, laboratory and imaging results, and treatments. Clinical record-keeping serves as a foundation for numerous activities involved in delivering and researching healthcare services (2). Due to the importance of medical records and the fact that younger professionals spend substantial portion of their working hours to managing these records (3), many recommendations from both national and international authorities have been put forth regarding the need for clinical record-keeping training in medical education (4, 5). For instance, among the core entrustable professional activities (EPAs) that medical students are expected to achieve by graduation, medical students are expected to be able to "document a clinical encounter in the patient record" (5).

However, some studies in the literature showed that adequate education in clinical record-keeping has not been provided (6-9). More specifically, there are studies showed that up to 18.2% of interns feel that they were not adequately prepared for documenting a clinical encounter and they cannot perform this core EPA without direct supervision (10, 11). There is a lack of alignment between this EPA and milestones of several specialties (12).

Amidst the challenges associated with teaching clinical record-keeping, it is reasonable to assert that learners have attempted to bridge this training gap through their own efforts. One of the first sources that medical students refers to is the internet. YouTube is the leading video-broadcasting platform on the internet today. According to 2023 data, 2.5 billion people access this site monthly, spending an average of 19 minutes per day (13). As a meta-analysis and systematic review pointed out (14), it also has been commonly used by medical students for educational purposes. Studies showed that not only medical students but also physicians and educators frequently use YouTube videos related to their fields (15-18) for various educational purposes (19). If we consider that clinical record keeping is a clinical skill, YouTube is seen as a useful source to improve clinical skills (20). However, the content in YouTube videos may suffer from lack of verification or review, raising questions about the comprehensiveness and instructional quality of the information (21-24).

There are many studies that evaluated quality of YouTube videos as information source for patients (23, 24). However, evaluation of videos regarding medical education lacks. The most recent scoping review on the educational value of YouTube videos in medical education showed that there is a lack of evaluative studies on the effectiveness of YouTube videos (22). The comprehensiveness of content and instructional quality are among the essential factors in the effectiveness of videos. Considering the importance of clinical record-keeping, the content of YouTube videos on this core skill needs to be evaluated. In this respect, the purpose of the study was to evaluate comprehensiveness and instructional quality of the videos on teaching clinical record-keeping on YouTube.

MATERIAL AND METHODS

Study Design: This is a descriptive study.

Search: The process of keyword-based searches on the YouTube platform was carried out from September 25, 2023, to September 28, 2023. The searches were performed without signing in to YouTube by using a private browsing window in the web browser. Since the objective of this study was to assess the comprehensiveness and instructional quality of videos recorded for educational purposes for medical students and professionals in clinical record-keeping, the chosen keywords for the searches included "patient history", "clinical history", "patient notes", "progress notes", "consultation notes", and "discharge report". A separate search was performed for each keyword. The total number of results obtained from these searches was 1298. Out of 1298 videos, 213 videos were duplicates. Therefore, 986 videos obtained from these instances of search were evaluated considering the eligibility criteria.

Eligibility Criteria: In the initial analysis, videos considered irrelevant were eliminated by reading the video titles and description sections.
The excluded videos were:

- not on teaching clinical record-keeping,
- recorded in a language other than English,
- recorded for other healthcare professionals,
- recorded for informing general public.

Following this process, 287 videos remained for watching the content of the videos. In this process, 228 videos were excluded for reasons, which are aligned with eligibility criteria, presented in Figure 1. Finally, 59 videos that met eligibility criteria were included in the study. All these processes were carried out by one reviewer (EE).

Data Collection: Data collection was carried out by one reviewer (EE). Data collection form consisted of five parts:

- Video statistics
- Video source
- Type of clinical record-keeping
- Comprehensiveness
- Instructional Quality

Video Statistics: Descriptive statistics, including the country of origin, video length, likes

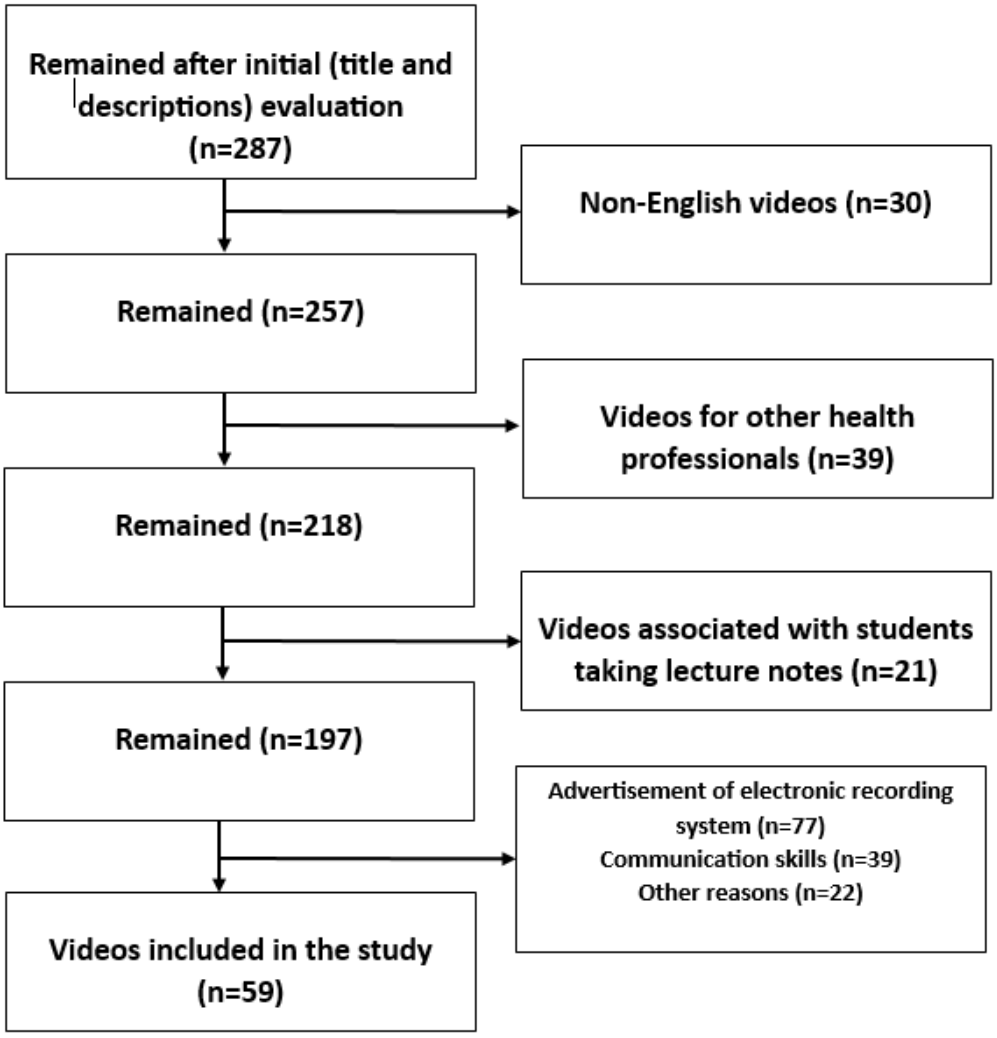

Figure1. Flowchart for video selection.

and dislikes count, comment count, and upload date, were documented. To present the videos' popularity, the number of views per day (number of views/days) and the like ratio (number of likes*100 / number of dislikes + number of likes) were calculated from this data. Lastly, the Video Power Index (VPI) was calculated as like ratio × view ratio/100 (25). In cases where videos consisted of multiple parts, they were treated as a singular entity by computing the view counts as the average of the view counts across the video parts. Regarding likes and dislikes, the highest counts from the various video parts were considered.

Video Source: The videos were assigned to these five categories according to their source (uploaders):

- Universities / professional organizations
- Individual academics (individuals who has academic titles)
- Non-academic physicians and medical students
- Non-physician healthcare professionals
- Non-healthcare professionals.

During the search for video sources, information from video descriptions, YouTube profiles, and, the video content itself, was utilized to identify the source. The decision not to present doctors and medical students as different categories was made because some videos were of older origin, making it challenging to distinguish whether the content was created during their student years or after transitioning into a professional role as a doctor. This approach was particularly necessary when considering cases where the uploader, although originally a student, is now practicing as a doctor. Lastly, if the video content includes information relevant to a particular medical specialty, such information was also recorded.

Type of Clinical Record-keeping: The assessment included determining the relevance of the videos to specific fields within clinical record-keeping. To achieve this, each video was assigned to one of these categories: “Patient history” and “Progress note”.

Comprehensiveness: Comprehensiveness of the videos were evaluated based on the specific categories regarding the type of clinical record-keeping they belong. QNOTE, an instrument for measuring the quality of notes, was used for videos on clinical record-keeping of patient history (26). In

the assessment of the videos on progress notes, a checklist developed for this type of documentation that consists of 18 items was used utilized (27). For the videos that include both patient history and progress notes, both of these tools were utilized and a comprehensiveness score (ComScore) was calculated by taking the average of the scores.

Instructional Quality: The instructional video quality checklist (IVQC) was used to evaluate the quality of the videos as educational materials, which was calculated over 27 points (28).

Statistical Analysis: Statistical analysis was performed using SPSS version 22.0 (IBM, Chicago, IL, USA). The descriptive data of the videos were presented by calculating descriptive statistics as mean ± standard deviation (SD) for continuous variables and percentages for categorical variables. Mann-Whitney U test was used in the analyses comparing two groups. $p<0.05$ was considered statistically significant.

Ethical Considerations: Since this study did not include any human participants but only involved publicly accessible videos, it does not require to obtain an ethical approval.

RESULTS

Among 59 videos were included in the study, 52 (88.14%) were on patient history, nine (15.24%) were on progress notes, and two (3.39%) were on both patient history and progress notes. Some descriptive statistics of the videos included in the study are shown in Table 1. Five videos reached more than 90% of comprehensiveness, while only one of them included all aspects of clinical record-keeping(https://www.youtube.com/watch?v=j0MsR-1e9ww).

Table 1. Descriptive findings of the videos

	Mean	SD	Minimum	Maximum
ComScore (n=59)	60.4	17.89	22.22	100
IVQC (n=59)	11.19	3.61	3	18
Duration on YouTube (days) (n=59)	1480.69	1067.78	76	4309
Video length (second) (n=59)	608.15	321.09	56	1305
Number of daily views (n=59)	41.49	55.1	0	217.68
Comment (n=57)	36.26	52.04	0	259
Like (n=58)	1136.28	1612.15	0	6015
Dislike (n=58)	23.24	37.89	0	156
Like ratio (n=59)	93.32	21.63	1	100
VPI(n=59)	40.45	54.24	0	213.04

ComScore: comprehensiveness score (out of 100), IVQC: instructional video quality checklist (out of 27), VPI: video power index

Of 59 videos, 14 (23.72%) specifically utilized the SOAP (subjective, objective, assessment, plan) note-taking method.

In the evaluation of the videos' affiliation with specific specialties, the number of videos related to specialties are as follows: Pulmonology (three videos), obstetrics (three videos), psychiatry (two videos), surgery (two videos), neurology, ophthalmology, clinical pharmacology, and intensive care (one video for each). Remained 45 (76.27%) videos were not specific to any specialty.

Upon evaluating the characteristics of the uploaders, it was found six (10.17%) videos were uploaded by universities or professional associations/organizations, five (8.47%) by individual academics, 33 (55.93%) by non-academic physicians or medical students, 11 (18.64%) by non-physician healthcare professionals, and three (5.08%) by non-healthcare professionals. The uploader of one (1.69%) video could not be classified. Group-based descriptive statistics are presented in Table 2.

Table 2. Descriptive information according to the uploader of the videos

	University / Professional Organization (n=6)	Academician (n=5)	Doctor / Medical student (n=33)	Non-doctor Healthcare Professionals (n=11)	Non-healthcare Professionals (n=3)
ComScore	62.96±22.48	67.78±25.80	57.37±16.15	62.5±17.945	61.11±17.35
IVQC	15.17±1.17	14±3.39	10.76±3.24	9.45±4.08	10.33±3.06
Duration on YouTube (days)	1430.5±898.14	2118.4±869.59	1324.42±984.24	1280.18±1083.95	2177±1714.15
Video length (second)	751.5±476.67	373.8±189.1	645.64±296.99	609.36±324.16	290±199.02
Number of daily views	51.05±44.77	89.01±63.38	42.82±61.94	23.29±26.15	7.99±2.60
Comment (n=57)	17.2±13.76	134.8±82.64	32.72±43.54	22.27±27.55	4.33±5.13
Like (n=58)	924.2±568.27	3579.8±2241.66	1170.09±1630.43	376.45±365.5	138±365.52
Dislike (n=58)	15±17.10	74.2±57.16	23.97±39.11	8.73±12.05	4±3.60
Like ratio	65.9±50.28	97.93±1.06	95.43±17.06	98.28±1.98	97.34±3.31
VPI	47.79±47.55	87.14±61.83	41.98±60.74	22.89±25.87	7.82±2.78

ComScore: comprehensiveness score (out of 100, IVQC: instructional video quality checklist (out of 27), VPI: video power index

In the examination of the countries from which the videos were uploaded, it was observed that 18 (30.51%) videos were from India, 15 (25.42%) from the United States, eight (13.56%) from the United Kingdom, four (6.78%) from Canada, three (5.08%) from Pakistan, two (3.39%) from the Philippines, and one (1.69%) each from Egypt, Nigeria, and South Africa. The origin countries of six (10.17%) videos could not be found. In a video uploaded by a university/professional organization, we excluded evaluation of likes, dislikes, and comments. Additionally, in a video uploaded by an individual academic, comments were not assessed. The reason was that these features were disabled in the videos.

Due to the limited number of uploaders in certain groups, group-based comparison was made by combining "universities or professional associations/organizations" and "individual academics" as the first group, others as the second group, which has been shown in Table 3. When uploader groups were divided into these two group, there was no significant difference in comprehensiveness score (p = 0.131). However, the first group (14.64±2.38) outperformed the second group (10.43±3.41) in IVQC score, and the difference was significant (p<0.001).

Table 3. Comparison of university/professional organization, academic uploaders group and others

	University / Professional Organization / Academician (n=11)	**Doctor / Medical student / Non-doctor Healthcare Professionals / Non-healthcare Professionals (n=47)**	**p-value**
ComScore	65.15±22.92	58.81±16.42	0.131
IVQC	14.64±2.38	10.43±3.41	**<0.001**
Duration on YouTube (days)	1743.18±913.71	1368.49±1050.22	0.168
Video length (second)	579.82±408.43	614.45±305.77	0.585
Number of daily views	68.3±54.79	36.03±54.23	**0.028**
Comment (n=57)	76±83.43	28.37±39.20	**0.036**
Like (n=58)	2252±2082.27	918.47±1426.44	**0.016**
Dislike (n=58)	44.6±50.55	19.13±33.97	**0.045**
Like ratio	80.46±39.30	96.22±14.33	0.081
VPI	65.67±55.52	35.34±53.20	0.090

ComScore: comprehensiveness score (out of 100, IVQC: instructional video quality checklist (out of 27), VPI: video power index Bolds are significant at <0.05 level.

DISCUSSION

Educational materials must meet high standards in terms of comprehensiveness and instructional quality. In this context, considering the extensive accessibility of YouTube and its use by medical students and medical educators, it is important to assess these aspects of YouTube videos. Therefore, educational videos on clinical record-keeping, which is one of the core competencies, were evaluated in terms of comprehensiveness and instructional quality.

In our study, the mean comprehensiveness score of the videos was 60.4±17.89 out of 100. This finding shows that video content on YouTube falls short in including the necessary components of clinical record-keeping. A student or physician watching the videos would only be able to obtain information about 60% of clinical record-keeping, missing a significant portion of the essential components of this core skill. This finding is similar to the previous studies that have highlighted the lack of quality in YouTube videos as a source for patients (23, 24). However, our findings pertain to the educational context specificatablelly for medical students and physicians. The finding is also in line with the scoping review on YouTube as an educational source that revealed many videos do not include sufficient content (22).

While the comprehensiveness of the videos did not meet the required standards, the instructional quality score was 11.19±3.61 out of 27. This implies that the quality of educational materials falls below half of the expected levels. Notably, our study revealed that the instructional quality score was higher among the university/professional organizations and individual academics compared to the other groups, aligning with expectations. Consistent with existing literature, similar studies have demonstrated that videos uploaded by academics or healthcare professionals tend to exhibit higher scores in terms of educational content and quality (25, 29-31). On top of these studies, two review studies found that quality of YouTube videos was superior if they were uploaded by the academics or reputable organizations compared to other uploaders (22, 24), even if the quality scores range within these groups varied widely across studies (24). Moreover, an

important finding in our study is the absence of a significant difference in the comprehensiveness score between both groups (university/academic 65.15±22.92, other 58.81±16.42). This suggests that even academics fall short in covering approximately 35% of the components of clinical record-keeping.

In a time where medical students ignore the curriculum and refer to alternative sources (32), it becomes imperative for medical educators to promote the use of reliable learning resources. Encouraging students to prefer videos uploaded by professional organizations or academics can be beneficial in ensuring a more comprehensive understanding of clinical record-keeping. Establishing a curated list of reliable sources for this purpose can guide learners toward more comprehensive materials. However, it is essential to advise students to approach each content with critical thinking skills, because even the videos uploaded by reputable sources do not include all components of clinical record keeping. Addition to that, in order to improve instructional quality of the videos, medical educators may benefit from quick tips and recommendations on this topic (33, 34).

Upon comparing the university/professional organizations and academic group with other uploaders, we found no significant difference between the two groups in terms of like ratio and VPI. These results indicate that there is no difference in popularity between these groups, aligning with similar findings in existing literature (24). However, it is noteworthy that the number of daily views was higher in the university/professional organizations and academician group. From these findings, one might infer that viewers, at the very least, show a preference for videos from uploaders they perceive as more reliable.

The study has several limitations. First, the evaluation of videos was confined to the most widely used video viewing platform, and videos from other sources might yield different conclusions. Second, as the study focused only on clinical record-keeping videos, it is necessary to recognize that generalizing conclusions to entire medical education cannot be warranted. Third, involving multiple reviewers for video evaluation would enhance the reliability of the findings. Last, while established data collection tools were utilized in the study, the potential impact of variations in clinical record-keeping education across diverse countries could influence our findings.

CONCLUSION

YouTube videos should be used cautiously for clinical record-keeping training by medical students and medical educators. For educators in the process of creating video materials, producing quality content with checklists and scales can be an important step in overcoming these obstacles. Additionally, although it may be challenging, enabling medical school students to identify and use videos with sufficient content quality in their online education materials and raising awareness on this matter will be beneficial.

REFERENCES

1. Mamykina L, Vawdrey DK, Stetson PD, Zheng K, Hripcsak G. Clinical documentation: composition or synthesis? J Am Med Inform Assoc. 2012;19(6):1025-31.
2. Rowlands S, Coverdale S, Callen J. Documentation of clinical care in hospital patients' medical records: A qualitative study of medical students' perspectives on clinical documentation education. Health Inf Manag. 2016;45:99-106.
3. Seo JH, Kong HH, Im SJ, Roh H, Kim DK, Bae HO, et al. A pilot study on the evaluation of medical student documentation: assessment of SOAP notes. Korean J Med Educ. 2016;28(2):237-41.
4. Liaison Committee on Medical Education. Functions and structure of a medical school. 2023 (October) [Internet] [cited 2023 Oct 25]. Available from: https://lcme.org/publications/
5. Association of American Medical Colleges. Core entrustable professional activities for entering residency faculty and learners' guide. [Internet] Core entrustable professional activities for entering residency. 2014. [cited 2023 Oct 25] https://www.aamc.org/about-us/mission-areas/medical-education/cbme/core-epas
6. Lai J, Tillman D. Curriculum to develop documentation proficiency among medical students in an emergency medicine clerkship. MedEdPORTAL. 2021;17:11194.
7. Emekli E, Coşkun Ö, Budakoğlu II, Kıyak YS. Clinical record keeping education needs in a medical school and the quality of clinical documentations. Konralp Medical Journal. 2023;15(2):257-65.
8. Dawson B, Carter K, Brewer K, Lawson L. Chart smart: a need for documentation and billing education among emergency medicine residents? West J Emerg Med. 2010;11(2):116-9.
9. Fakhry SM, Robinson L, Hendershot K, Reines HD. Surgical residents' knowledge of documentation and coding for professional services: an opportunity for a focused educational offering. Am J Surg. 2007;194(2):263-7.
10. Obeso V, Grbic D, Emery M, Parekh K, Phillipi C, Swails J, et al. Core entrustable professional activities for entering residency pilot. Core entrustable professional activities (EPAs) and the transition from medical school to residency: the Postgraduate year one resident perspective. Med Sci Educ. 2021;31(6):1813-22.
11. Pearlman RE, Pawelczak MA, Bird JB, Yacht AC, Farina GA. Incoming interns perceived preparedness for core entrustable professional activities. Med Sci Educ. 2019;29(1):247-53.

12. Ryan MS, Iobst W, Holmboe ES, Santen SA. Competency-based medical education across the continuum: How well aligned are medical school EPAs to residency milestones? Med Teach. 2022;44(5):510-8.
13. Aslam S. YouTube by the numbers: Stats, demographics & fun facts. [Internet] [cited 2023 Oct 25]. https://www.omnicoreagency.com/youtube-statistics
14. Guraya SY. The usage of social networking sites by medical students for educational purposes: A meta-analysis and systematic review. N Am J Med Sci. 2016;8(7):268-78.
15. Glass NE, Kulaylat AN, Zheng F, Glarner CE, Economopoulos KP, Hamed OH, et al. A national survey of educational resources utilized by the Resident and Associate Society of the American College of Surgeons membership. Am J Surg. 2015;209(1):59-64.
16. Mikalef P, Kourouthanassis PE, Pateli AG. Online information search behaviour of physicians. Health Info Libr J. 2017;34(1):58-73.
17. Schmidt RS, Shi LL, Sethna A. Use of streaming media (YouTube) as an educational tool for surgeons-a survey of AAFPRS members. JAMA Facial Plast Surg. 2016;18(3):230-1.
18. Rapp AK, Healy MG, Charlton ME, Keith JN, Rosenbaum ME, Kapadia MR. YouTube is the most frequently used educational video source for surgical preparation. J Surg Educ. 2016;73(6):1072-6.
19. Gayef A, Çaylan A. Use of Youtube in medical education. Konuralp Medical Journal. 2021;13(3):640-7.
20. Topps D, Helmer J, Ellaway R. YouTube as a platform for publishing clinical skills training videos. Acad Med. 2013;88(2):192-7.
21. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on YouTube: A systematic review. Health Informatics J. 2015;21(3):173-94.
22. Curran V, Simmons K, Matthews L, Fleet L, Gustafson DL, Fairbridge NA, et al. YouTube as an Educational Resource in Medical Education: a Scoping Review. Med Sci Educ. 2020;30(4):1775-82.
23. Osman W, Mohamed F, Elhassan M, Shoufan A. Is YouTube a reliable source of health-related information? A systematic review. BMC Med Educ. 2022;22(1):382.
24. Helming AG, Adler DS, Keltner C, Igelman AD, Woodworth GE. The content quality of YouTube videos for professional medical education: A systematic review. Acad Med. 2021;1;96(10):1484-93.
25. Erdem MN, Karaca S. Evaluating the accuracy and quality of the information in kyphosis videos shared on YouTube. Spine (Phila Pa 1976). 2018;43(22):E1334-9.
26. Burke HB, Hoang A, Becher D, Fontelo P, Liu F, Stephens M, et al. QNOTE: an instrument for measuring the quality of EHR clinical notes. J Am Med Inform Assoc. 2014;21(5):910-6.
27. Bierman JA, Hufmeyer KK, Liss DT, Weaver AC, Heiman HL. Promoting responsible electronic documentation: Validity evidence for a checklist to assess progress notes in the electronic health record. Teach Learn Med. 2017;29(4):420-32.
28. Schooley SP, Tackett S, Peraza LR, Shehadeh LA. Development and piloting of an instructional video quality checklist (IVQC). Med Teach. 2022;44(3):287-93.
29. Ferhatoglu MF, Kartal A, Ekici U, Gurkan A. Evaluation of the reliability, utility, and quality of the information in sleeve gastrectomy videos shared on open access video sharing platform YouTube. Obes Surg. 2019;29(5):1477-84.
30. Katipoğlu B, Akbaş İ, Koçak AO, Erbay MF, Turan Eİ, Kasali K. Assessment of the accuracy of cardiopulmonary resuscitation videos in English on YouTube according to the 2015 AHA Resuscitation Guidelines. Emerg Med Int. 2019;2019:1272897.
31. Khandelwal A, Devine LA, Otremba M. Quality of widely available video instructional materials for point-of-care ultrasound-guided procedure training in internal medicine. J Ultrasound Med. 2017;36(7):1445-52.
32. Surapaneni KM. Influence of Competitive Entrance Exams on Medical Students' Preferences to Non-traditional Learning Resources. Med Sci Educ. 2023;33(6):1437.
33. Norman MK. Twelve tips for reducing production time and increasing long-term usability of instructional video. Med Teach. 2017;39(8):808-12.
34. Krumm IR, Miles MC, Clay A, Carlos Ii WG, Adamson R. Making effective educational videos for clinical teaching. Chest. 2022;161(3):764-72.